

*LIPOGRAMMA ROBINSI*, A NEW BASSLET FROM THE  
TROPICAL WESTERN ATLANTIC, WITH DESCRIPTIVE AND  
DISTRIBUTIONAL NOTES ON *L. FLAVESCENS* AND  
*L. ANABANTOIDES* (PERCIFORMES: GRAMMATIDAE)

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ABSTRACT

A new grammatid, *Lipogramma robinsi* is described from two specimens collected with the Johnson-Sea-Link I submersible from a depth of 202 m (656 ft) off east Glover Reef, Belize, 16° 49.35' N, 87° 44.04' W and 290 m (943 ft) off Riding Rock, San Salvador, Bahama Islands, 24° 03.52' N, 74° 32.47' W. A second specimen of *L. flavescens*, originally described from San Salvador, Bahama Islands was captured from Glover Reef, Belize. Fresh color notes on a Mexican specimen of *L. anabantoides* differs greatly from the original description.

The genus *Lipogramma* was described by Böhlke (1960), generic type, *L. anabantoides*, based on specimens collected at depths of 21.5–23 m off Grand Bahama Island and placed in the family grammidae (= stigmatonotidae; family type, *Gramma loreto*, Poey 1868). Randall (1963) described two basslets, *L. trilineata* and *L. klayi* from deeper waters, 49 m, off Curaçao, the former species also from Puerto Rico, depth 22 m. Three additional species: *L. evides* from depths of 145–265 m off Jamaica and Belize; *L. roseum* (as *L. rosea*) from depth of 32–33 m off Isla Providencia, Colombia; and *L. regium* (as *L. regia*) from 70–75 m depths off Puerto Rico were described by Robins and Colin (incl. Gilbert, 1979). Gilmore and Jones (1988) added yet another species, *L. flavescens*, collected at 285 m off San Salvador, Bahama Islands and found populations of *L. evides* extending to depths of 302 m. These deeper records extended the range of *Lipogramma* basslets into the upper region of the bathyal biogeographic zone (epi-bathyal zone) of the deep sea.

A systematic survey of deep neritic and epibathyal ichthyofaunas of the tropical western Atlantic, the Bahama Islands and Caribbean Sea has demonstrated that grammatids are common members of this fish community. *Lipogramma evides*, one of the most common epibathyal basslets, has been collected more frequently using submersibles and is particularly common on sedimentary substrates in the Bahama Islands below depths of 180 m. Recent submersible collections in the Bahamas and Belize have added yet another *Lipogramma* species, the eighth, to the neotropical epibathyal ichthyofauna.

All specimens were collected with a rotenone resin, dimethyl-sulfoxide, ethanol mixture (Gilmore et al. 1981) ejected into rock formations with a hydraulic delivery system from the JOHNSON-SEA-LINK I submersible operating off of the R/V JOHNSON, R/V SEWARD JOHNSON and R/V EDWIN LINK. A suction device and numbered rotating canister system, the "critter gitter", was used to retrieve fishes collected.

Specimen examination methodologies follow Hubbs and Lagler (1947) and Gilmore and Jones (1988).

The following abbreviations are used in the lists of materials examined: USNM = United States National Museum; UF = Florida State Museum; HBOM = Harbor Branch Oceanographic Museum.

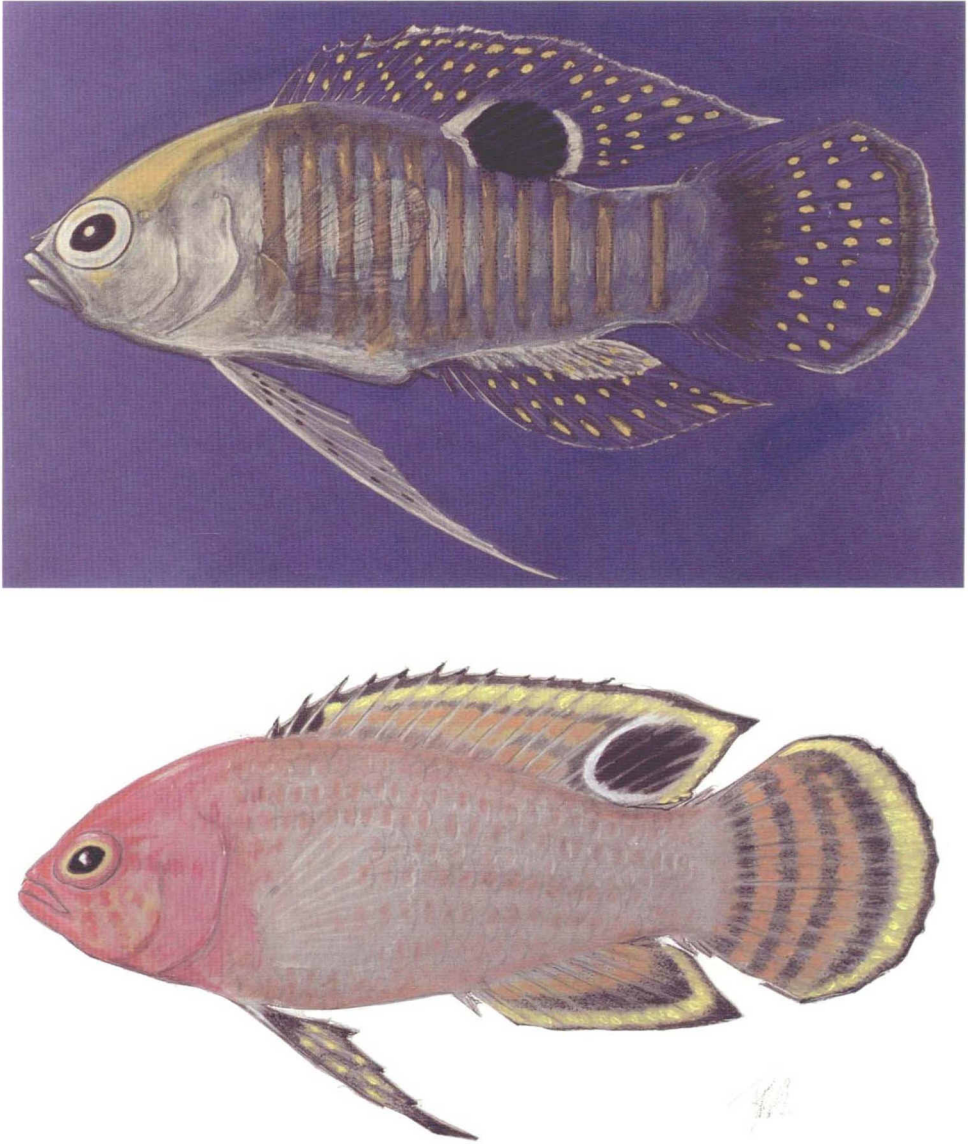


Figure 1. *Lipogramma robinsi* Holotype, 22.1 mm SL, USNM 340015 (above); *Lipogramma anabantoides* HBOM 107:07974 (below).

***Lipogramma robinsi* new species**

Yellowbar basslet

Figure 1, Table 1

*Holotype*.—USNM 430015, 22.1 mm SL; east coast Glover Reef, Belize; 16° 49.35' N, 87° 44.04' W; 202 m; rotenone and "critter gitter"; 1 September 1990; R/V EDWIN LINK, JOHNSON-SEA LINK I submersible dive 2797, R.H. Brockmeyer and C. Caddigan; Paratype.—UF 101375, 17 mm SL; off Riding Rock, San Salvador, Bahama Islands; 24° 03.52' N, 74° 32.47' W; 290 m; rotenone and "critter gitter"; 5 May 1987; R/V SEWARD JOHNSON, JOHNSON-SEA LINK I submersible dive 2029, G.C. Ray and D. Liberatore.

Table 1. Morphometric and meristic characters of *Lipogramma robinisi* and *L. flavescens* (All measurements except SL and TL are in percent SL)

	<i>L. robinisi</i> (holotype) USNM 340015	<i>L. robinisi</i> (paratype) UF 101375	<i>L. flavescens</i> UF 101376
Standard length (mm)	22.1	17.0	25.6
Total length (mm)	29.2	22.7	32.8
Head length	35	39	35
Maximum body depth	39	34	36
Orbit width	13	15	14
Interorbit	12	6	6
Postorbital length	17	18	16
Head width	22	24	21
Mandible length	12	13	12
Upper jaw length	13	15	13
Snout length	7	7	5
Snout to dorsal origin	44	43	41
Snout to pectoral origin	37	38	36
Snout to pelvic origin	37	37	34
Snout to anal origin	63	72	63
Snout to vent	60	70	58
Depth of caudal peduncle	21	15	19
Dorsal fin length	72	61	66
Dorsal base length	49	42	46
Anal fin length	47	41	41
Anal base length	21	20	20
Pectoral fin length	25	28	25
Pelvic fin length	47	41	50
Dorsal fin	XII-9	XII-9	XII-9
Anal fin	III-8	III-8	III-8
Pectoral	15	15	16
Pelvic	I-5	I-5	I-5
Caudal	III + 2 + 15 + 2 + III	III + 2 + 15 + 2 + III	III + 2 + 15 + 2 + III
Lateral scale rows	25	21	lost
Oblique scale rows	8	8	lost
Gill rakers	16 (4 + 12)	14 (3 + 11)	15 (5 + 10)
Vertebrae	10 + 15	10 + 15	10 + 15

**Diagnosis.**—Dorsal rays XII-9, last ray composite; anal rays III-8, last ray composite; pectoral rays 15; pelvic rays I-5; first segmented ray elongate, extending to base of last anal ray, (41–47% of SL); segmented caudal rays 19 (III-2+8+7+2-III); gill rakers 14–16 (3–4 + 11–12); vertebrae 25 (10+15); no lateral line canal on body; maxilla naked; 21–25 lateral scale rows. Elongate tubular anterior nares. Body translucent green to flesh colored, with 10–12 narrow light sand yellow vertical bars along side from pectoral base to caudal base, nape bright cadmium/canary yellow, multiple rows of yellow spots on dorsal, caudal and anal fins, white margin on dorsal and caudal fins, pectoral fins translucent; pelvic fins white, with 2–3 rows of black spots, white pigment at base of anal fin; black ocellus covering base of soft dorsal fin.

**Description.**—Counts and measurements of holotype and paratype are given in Table 1.

Spinous and soft dorsal fins confluent, spines 8 through 12 longest, with rays 6–8 extending beyond caudal base. All dorsal soft rays branched, as are anal rays and all but 2–3 pectoral rays. Caudal fin slightly emarginate with a shallow central notch, with three spines, two unbranched procurent rays above and below, 15 branched caudal rays which are based on terminal hypurals. Fifth and sixth anal rays extend beyond caudal base. Pectoral fin oval, extending just to anal origin.

Proportional measurements indicate an oval body 34–39% SL; large orbit 13–15% SL, similar to *L. evides*; short to moderate snout similar to *L. evides*, *L. klayi* and *L. roseum* (Gilmore and Jones 1988).

Upper jaw dentition comprising uniserial series of conical teeth, except at symphysis where several larger canines extend out from primary row. Lower jaw dentition similar to that in upper jaw.

Lateral line absent. Head pore system nearly identical to that of *L. roseum* (Robins and Colin 1979), consisting of four pores in supraorbital (ocular) canal, with single interocular pore between junction of preopercular canal and infraorbital connection. A single supratemporal pore dorso-anterior to supraocular canal. Four pores in supratemporal-infraorbital canal, and at least five in preopercular canal. Two pores occur at either end of isolated suborbital canal anterior to orbit. Anterior nostrils at apex of elongate narial tubes, as in *L. flavescens*. Posterior narial opening adjacent to second anterior supraorbital pore at orbit margin.

Scales large, deciduous, without strong ctenii; 21–25 lateral rows from shoulder girdle to caudal base and 8 rows between spinous dorsal- and anal-fin origins. Weak ctenii on lateral scales; dorsal and ventral scales at least one-fourth size of enlarged central lateral scales. Scale morphology similar to *L. evides*, differing from *L. flavescens*, which has strong ctenii in a triangular patch (Gilmore and Jones 1988, Fig. 2). Scales extend forward on head just posterior to orbits. Scales on cheeks, preopercle, opercle, interopercle and isthmus lack ctenii. Fins naked.

Margin of opercle and preopercle entire.

Body translucent green to flesh colored in life with 10–12 narrow light sand yellow vertical bars along side from pectoral base to caudal base, bar number increasing with size of fish. All vertical yellow body bars outlined with small black melanophores. Nape bright cadmium/canary yellow, with brightest pigment just posterior to interorbital region. Multiple rows (typically three rows) of yellow spots on transparent dorsal membrane with a white margin. Black ocellus covering soft dorsal fin base. Caudal fin translucent, with light yellow membrane at base, three rows of yellow spots and white posterior margin. Anal fin translucent with white basal region, three rows of yellow spots. Pectoral fins translucent. Pelvic fins white with 2–3 rows of black spots.

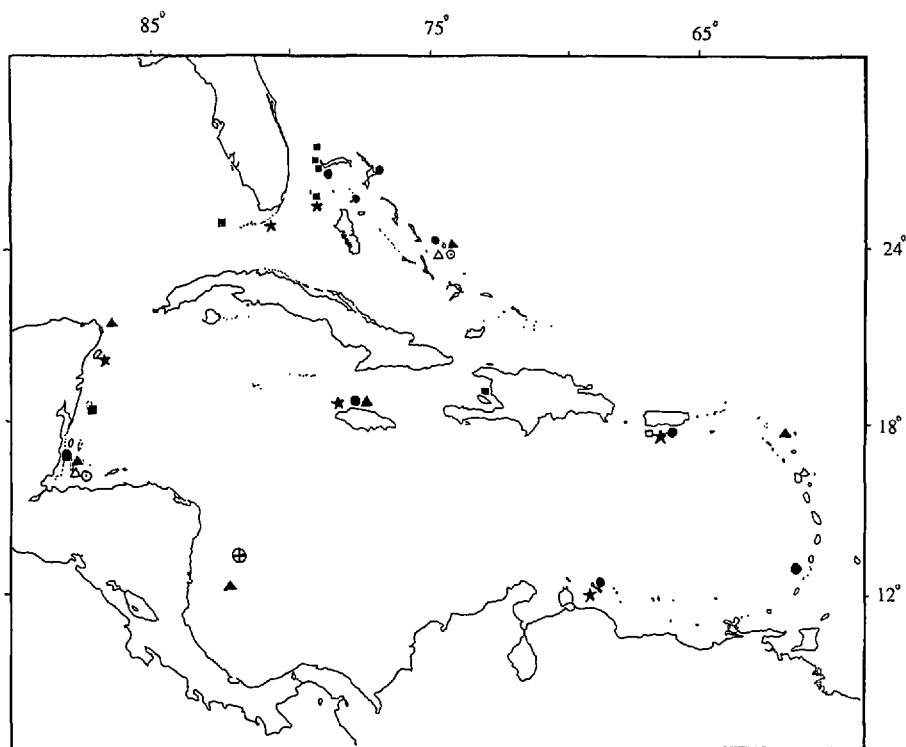


Figure 2. Distribution of all species of the genus *Lipogramma* in the Caribbean basin. ★ = *L. trilineatum*; ■ = *L. anabantoides*; ⊕ = *L. roseum*; □ = *L. regium*; ● = *L. klayi*; ▲ = *L. evides*; △ = *L. flavescens*; ⊙ = *L. robinsi*.

Fourteen to 16 long gill rakers (3–4) + (11–12), including rudiments. Rakers on upper arch and at angle with secondary rakers or pointed teeth along their inner margin, as in *L. flavescens* and *L. evides* (Gilmore and Jones 1988, Fig. 2B).

**Etymology.**—Named after the prominent ichthyologist Dr. C. Richard Robins whose work and students have contributed significantly to our understanding of the neritic, bathyal and abyssal faunas of the tropical western Atlantic and Caribbean Sea.

**Habitat.**—Both specimens were collected with rotenone and a water suction system from under a sedimentary rock ledge. Dead *Halimeda* (Chlorophyta: Halimedaceae, Caulerpales) segment rubble and other calcareous sediments occurred around the rock formations. Little or no sessile invertebrate growth was associated with these rock structures. Water temperatures at the depth of capture at Glover Reef and San Salvador were approximately 20° C.

**Distribution.**—The types of *L. robinsi* were captured over 1,500 km apart and at islands with unrelated oceanic current environments (Fig. 2). It is very likely that *L. robinsi* will be found at other locations within the tropical western Atlantic and Caribbean where suitable hydrological climates and sedimentary substrates occur. The perceived rarity of the species is undoubtedly due to the difficulty in reaching its habitat without submersibles and in making observations without artificial lights.

Table 2. Grammatid basslet depth distribution, genus *Lipogramma*

Species	20	70	120	Depth (m) 170	220	270	320
<i>L. trilineatum</i>	_____						
<i>L. anabantoides</i>	_____						
<i>L. roseum</i>	_____						
<i>L. regium</i>		_____					
<i>L. klayi</i>		_____					
<i>L. evides</i>		_____					
<i>L. flavescens</i>					_____		
<i>L. robinsi</i>					_____		

**Relationships.**—Morphometric characters do not consistently separate *L. robinsi* from the other species within the genus. However, the presence of an ocellus and identical dorsal and anal meristics seem to relate *L. robinsi* with *L. regium* and these species to the other epibathyal grammatids, *L. evides* and *L. flavescens*. *L. evides* has three dark vertical bars, the most permanent in preserved specimens being the orbital bar. The orbital bar is lacking in *L. robinsi*. *L. regium* and *L. flavescens* have one to two additional pectoral rays. The latter species has only 20 lateral scale rows, and strongly ctenoid scales (Gilmore and Jones 1988, Fig. 2), lacks vertical body bars, but has a prominent black bar across the orbit. *L. robinsi* can be separated from *L. flavescens* by the absence of a black orbital bar, having weakly ctenoid scales, 21–25 lateral scales rows and 10–12 faint lateral bars revealed by a fine vertical double row of melanophores in preserved specimens. *L. regium* has six vertical bars with bars four and five curved around the dorsal ocellus. *L. regium* has not been recorded deeper than 75 m and is not syntopic with *L. robinsi*, but *L. flavescens* is syntopic. However, *L. flavescens* can be readily separated from *L. robinsi* using the aforementioned characters. The *L. robinsi* cephalic lateral line pattern overlaps with several other infrageneric species and is presently not considered of great taxonomic value.

***Lipogramma flavescens* Gilmore and Jones 1988**

Yellow basslet

Table 1

A second specimen of *L. flavescens* (UF 101376, 22.1 mm SL) was captured on the east coast of Glover Reef, Belize; 16° 49.35' N, 87° 44.04' W; 202 m; rotenone and "critter gitter"; 1 September 1990; R/V EDWIN LINK, JOHNSON-SEA LINK I submersible dive 2797, R.H. Brockmeyer and C. Caddigan. Meristic and morphometric information on this fish are given in Table 1. The color of this specimen did not differ from the holotype. This represents a significant range extension for *L. flavescens* as the holotype was captured in French Bay, San Salvador, Bahama Islands.

***Lipogramma anabantoides* Böhlke 1960**

Dusky basslet

Figure 1

The original color description of this species was based on a preserved specimen (Böhlke 1960). Subsequently, fresh color in *L. anabantoides* has not been described. A 13.5 mm SL specimen (HBOM 107:07974) captured on JOHNSON-SEA-LINK submersible dive 2779 at 79 m off west central Banco Chinchorro, Quintana Roo, Mexico on 22 August 1990 was drawn and photographed imme-

diately after capture. The color differs significantly from previous descriptions and a redescription is warranted.

Head brilliant rose red from snout to origin of pectorals, pelvics and dorsal, including orbit. Remainder of body reddish brown (burnt sienna) with lighter lines between darker pigmented scale rows (Fig. 1). Dorsal with black spot between first three dorsal spines, black margin over entire fin and black partial ocellus covering last 6–7 dorsal rays; anterior unpigmented region of ocellus white, posterior yellow forming a yellow submarginal line that extends throughout the length of the fin. Central portion of dorsal anterior to the ocellus with orange pigment. Four vertical bands on caudal, anterior three orange, posterior band yellow. Anal with submarginal yellow stripe and supra-basal orange pigment. Margin of anal black. Pelvic fin black, with scattered yellow spots. This color description differs significantly from the original as previous descriptions do not describe red or yellow pigments, which are readily lost in fixatives.

This specimen also constitutes the first record of *L. anabantoides* from the western Caribbean and the deepest record to date (Fig. 2, Table 2). The depth range of *L. anabantoides* is 22 to 79 m with 33 of the 37 known specimens having been collected at depths less than 50 m. *Lipogramma anabantoides* is now known from the Bahama Islands, Hispaniola, Florida and Banco Chinchorro, off Yucatan (Böhlke 1960; Robins and Colin 1979; Gilmore and Jones 1988). This diminutive grammatid is most certainly widely distributed on calcareous substrates in the tropical western Atlantic and Caribbean. However, *L. anabantoides* was absent from extensive Johnson-Sea-Link I submersible collections made in April–May 1989 in the windward islands of the Lesser Antilles, as were all other *Lipogramma* species except *L. klayi*.

#### ACKNOWLEDGMENTS

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